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World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse



THE UNITED STATES OF AMERICA

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UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

March 04, 2005

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APPLICATION NUMBER: 60/543,868

FILING DATE: February 12, 2004

RELATED PCT APPLICATION NUMBER: PCT/US05/04105



Certified by

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
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021204

16523 U.S. PTO

PTO/SB/16 (01-04)

Approved for use through 07/31/2006. OMB 0651-0032

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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. ER 769419825

INVENTOR(S)					
Given Name (first and middle [if any])		Family Name or Surname		Residence (City and either State or Foreign Country)	
George William		Adamson		Henderson, Nevada	
Additional inventors are being named on the <u>one</u> separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
Secure Ink for Manually Generated Documents					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input checked="" type="checkbox"/> Customer Number: 38460					
OR					
<input type="checkbox"/> Firm or Individual Name					
Address					
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages <u>2</u>					
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets <u>3</u>					
<input checked="" type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
<input type="checkbox"/> CD(s), Number _____					
<input checked="" type="checkbox"/> Other (specify) <u>Return Post Card</u>					
<input type="checkbox"/> METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
<input type="checkbox"/> A check or money order is enclosed to cover the filing fees.					
<input type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: _____					
<input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
FILING FEE Amount (\$) <div style="border: 1px solid black; padding: 10px; display: inline-block; text-align: center;"> <u>80</u> ⁰⁶/₁₀₀ </div>					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

1535 U.S. PTO 60/543868

021204

[Page 1 of 2]

Respectfully submitted,

SIGNATURE

George W. Adamson

TYPED or PRINTED NAME

George W. Adamson

TELEPHONE

702-630-3745

Date

11 Feb 04

REGISTRATION NO.

(if appropriate)

Docket Number:

VTE-1

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PROVISIONAL APPLICATION COVER SHEET
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Docket Number

VTL-1

INVENTOR(S)/APPLICANT(S)

Given Name (first and middle [if any])

Family or Surname

Residence
(City and either State or Foreign Country)

James K.

Pugh

Lakeland, Florida

[Page 2 of 2]

Number

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of

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PTO/SB/17 (10-03)
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FEE TRANSMITTAL for FY 2004 <small>Effective 10/01/2003. Patent fees are subject to annual revision.</small>		Complete if Known	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Application Number	
		Filing Date	
		First Named Inventor	
		Examiner Name	
		Art Unit	
TOTAL AMOUNT OF PAYMENT		Attorney Docket No.	

METHOD OF PAYMENT (check all that apply)	FEE CALCULATION (continued)																																																																																																																																																																																		
<input type="checkbox"/> Check <input checked="" type="checkbox"/> Credit card <input type="checkbox"/> Money Order <input type="checkbox"/> Other <input type="checkbox"/> None <input type="checkbox"/> Deposit Account: Deposit Account Number _____ Deposit Account Name _____ The Director is authorized to: (check all that apply) <input checked="" type="checkbox"/> Charge fee(s) indicated below <input checked="" type="checkbox"/> Credit any overpayments <input checked="" type="checkbox"/> Charge any additional fee(s) or any underpayment of fee(s) <input type="checkbox"/> Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.	3. ADDITIONAL FEES <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Large Entity</th> <th colspan="2">Small Entity</th> <th rowspan="2">Fee Description</th> <th rowspan="2">Fee Paid</th> </tr> <tr> <th>Fee Code</th> <th>Fee (\$)</th> <th>Fee Code</th> <th>Fee (\$)</th> </tr> </thead> <tbody> <tr><td>1051</td><td>130</td><td>2051</td><td>65</td><td>Surcharge - late filing fee or oath</td><td></td></tr> <tr><td>1052</td><td>50</td><td>2052</td><td>25</td><td>Surcharge - late provisional filing fee or cover sheet</td><td></td></tr> <tr><td>1053</td><td>130</td><td>1053</td><td>130</td><td>Non-English specification</td><td></td></tr> <tr><td>1812</td><td>2,520</td><td>1812</td><td>2,520</td><td>For filing a request for <i>ex parte</i> reexamination</td><td></td></tr> <tr><td>1804</td><td>920*</td><td>1804</td><td>920*</td><td>Requesting publication of SIR prior to Examiner action</td><td></td></tr> <tr><td>1805</td><td>1,840*</td><td>1805</td><td>1,840*</td><td>Requesting publication of SIR after Examiner action</td><td></td></tr> <tr><td>1251</td><td>110</td><td>2251</td><td>55</td><td>Extension for reply within first month</td><td></td></tr> <tr><td>1252</td><td>420</td><td>2252</td><td>210</td><td>Extension for reply within second month</td><td></td></tr> <tr><td>1253</td><td>950</td><td>2253</td><td>475</td><td>Extension for reply within third month</td><td></td></tr> <tr><td>1254</td><td>1,480</td><td>2254</td><td>740</td><td>Extension for reply within fourth month</td><td></td></tr> <tr><td>1255</td><td>2,010</td><td>2255</td><td>1,005</td><td>Extension for reply within fifth month</td><td></td></tr> <tr><td>1401</td><td>330</td><td>2401</td><td>165</td><td>Notice of Appeal</td><td></td></tr> <tr><td>1402</td><td>330</td><td>2402</td><td>165</td><td>Filing a brief in support of an appeal</td><td></td></tr> <tr><td>1403</td><td>290</td><td>2403</td><td>145</td><td>Request for oral hearing</td><td></td></tr> <tr><td>1451</td><td>1,510</td><td>1451</td><td>1,510</td><td>Petition to institute a public use proceeding</td><td></td></tr> <tr><td>1452</td><td>110</td><td>2452</td><td>55</td><td>Petition to revive - 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SUBMITTED BY		(Complete if applicable)	
Name (Print/Type)	George W. Adamson	Registration No. (Attorney/Agent)	Telephone 702 630 3745
Signature	<i>George W. Adamson</i>	Date	11 Feb 04

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SECURE INK FOR MANUALLY GENERATED DOCUMENTS

FIELD OF INVENTION

This invention relates to improved ink formulations for manual application to paper type materials which provide greatly enhanced resistance to chemical removal. This attempted chemical removal can be by means of bleaching, extraction or washing.

BACKGROUND OF THE INVENTION

Check fraud in the United States results in a loss by banks of over 14 billion dollars annually. Over 2 billion dollars of that loss is caused by a form of fraud commonly called check washing. Check washing begins with the theft of a legitimate check, from a mailbox for instance. The written payee and amount are then removed from the check using chemical means. The ink is either washed off or extracted using a variety of solvents or household cleaners. Alternately, the pigments and dye in the ink are bleached using standard bleaching agents, such as sodium hypochlorite or hydrogen peroxide. A fraudulent payee and amount are entered, and the check cashed at a bank. Currently a number of techniques are used to try to thwart this fraud. Specialty printing inks have been developed to provide security features to the pre printed check. Some inks change color or fade when brought in contact with certain chemicals, or invisible writing appears on contact with a chemical. All of these techniques have the problem of prematurely voiding a check that comes innocently in contact with every day chemicals. This is especially true due to the recent implementation of mail sterilizing procedures. Therefore, there is currently a need for an ink formulation that can survive both washing and bleaching while being capable of being applied with a pen or stylus.

SUMMARY OF THE INVENTION

The essence of this invention is the addition of a chemical coupling agent to an ink formulation that serves to chemically bond the pigments or dyes used in the ink to the paper fibers. The bonding mechanism of the coupling agent to the pigment or dye could be covalent, ionic, hydrogen-bonding or dispersion forces. And, the bonding mechanism of the coupling agent to the cellulose fibers in paper could be covalent, ionic, hydrogen-bonding or dispersion forces. These binding agents could be pre-bound to the pigments or dyes such that the coupling agent need only bind to the paper fiber after application. These agents could also not be pre-bound to the pigments and bind to the pigments only after application. Paper fibers are made up of cellulose strands, and these strands contain many hydroxyl groups. It is these hydroxyl groups that can most easily be used to attach a coupling agent to the strand. There are five different classes of chemical reactions that can be exploited to attach the coupling agent to the

fiber. These five reactions are: etherification, esterification, oxidation, acetylation and hydrogen bonding. However, there are probably other reactive sites that could be exploited using other coupling reactions than those listed here for hydroxyl. Also the coupling agent may only modify, functionalize, the cellulose. In this case only a portion or none of the coupling agent may remain attached to the cellulose. Examples of this case can be found in systems using oxidation as the binding mechanism. In this case, the coupling agent converts the hydroxyl group of the cellulose into an aldehyde, ketone or carboxylic acid group. This converted group can then go on to bind to the pigment or dye. Alternate embodiments could also pre-bind the coupling agent to the paper such that it would bind to the pigments or dyes on application of an ink.

BRIEF DESCRIPTION OF THE DRAWINGS

Drawing 1. The structure of cellulose fibers is shown. Cellulose is a polymer of glucose. This provides several hydroxyl groups to bond to with coupling agents, as well as ring opening reaction sites to add further functionality without breaking the chain backbone.

Drawing 2. The four mechanisms of binding to cellulose are shown. Ionic and covalent bonds are typically very strong binding interactions. Hydrogen-bonding is the weakest single bond but when this bonding exists between a polymer and the cellulose chain then there are hundreds of thousands of interactions that can produce a very strong total binding. Dispersion forces are the smallest in magnitude but when polymers are involved the total binding force can be large. An example of binding through dispersion forces is if the cellulose and binding agent form a solid solution.

Drawing 3. The most common reactions involving the hydroxyl groups of cellulose are shown. A coupling agent could exploit any of these reactions singly or in combinations to attach to the cellulose fiber.

Figure 1.

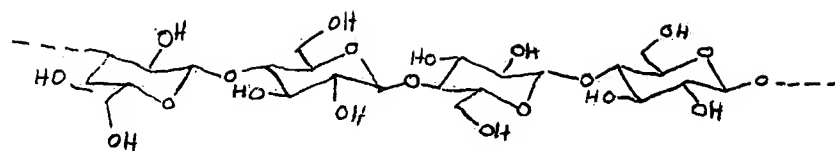
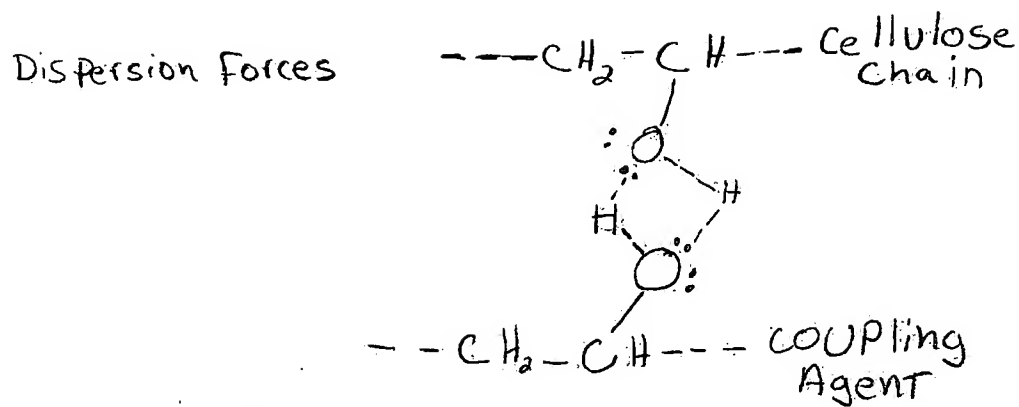
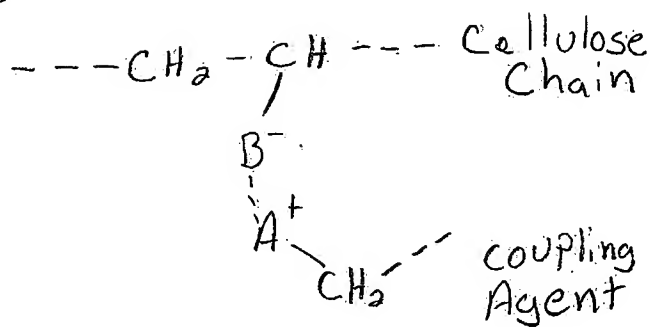


Figure 2.



Ionic Bonding



Covalent Bonding

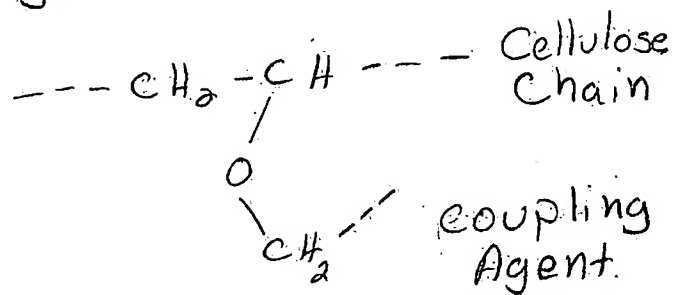
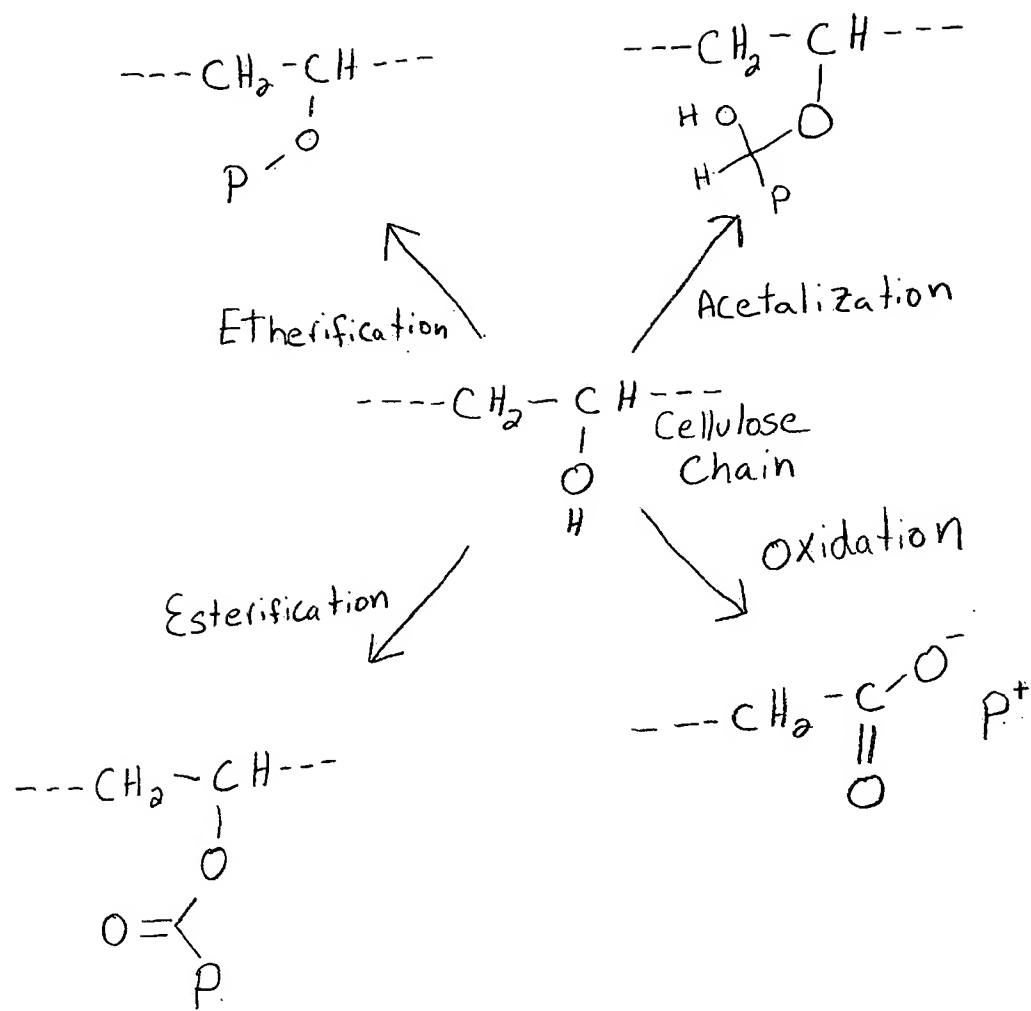


Figure 3.



P = Pigment or Dye

Application Data Sheet

Application Information

Application Type::	Regular
Subject Matter::	Provisional
Suggested Classification::	106/31.13
Suggested Group Art Unit::	
CD-ROM or CD-R?	None
Title:	Secure Ink For Manually Generated Documents
Docket No.::	VTL-1
Request for Early Publication?::	No
Request for Non-Publication?::	No
Suggested Drawing Figure::	
Total Drawing Sheets::	3
Small Entity::	Yes
Petition included?::	No
Secrecy Order in Parent Appl.?::	No

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